

MISCELLANEOUS.

Remarks on the Habits of the Common Mussel.

By DAVID ROBERTSON, Esq.

I HAVE been much interested in watching the habits of a common Mussel (*Mytilus edulis*), which has afforded me many hours of pleasant amusement. It had been in my keeping for three months. I had taken little notice of it, till finding that it had removed from the bottom, and attached itself about two inches up the side of the jar, I became curious to know how it had got up. I observed that the fibres of the byssus were fixed at various heights; that the lowermost were fully an inch from the bottom; that by their apparent contraction it could raise itself nearly an inch; and that from this position other fibres could and had been fixed higher up; hence the ascent. It remained in this position for eight days, during that time adding more fibres till it had twenty-one, the lowermost now appearing circularly below the shell, and the upper ones circularly above it. It was now apparently a permanent fixture, at least within the limits of its moorings; by drawing the byssus towards the beak, or the base, it could move the ends of the shell alternately up and down: the movements were at times frequent. On the tenth day after mounting the side of the jar, it detached itself, and fixed upon another place a little farther round, by four new fibres, leaving the old byssus hanging to the glass; this is an interesting microscopic object, somewhat palmate, dividing into numerous filaments, and is attached to the animal by a small peduncle, which nature has given the creature power to sever when a change is required. I was desirous to see the actual process of fixing the fibres, and began to watch with more care. It had now six fibres; and, with the hope that it would require to produce more, I cut three, leaving only three, by which it supported itself and went through its usual movements with apparent ease; the only perceptible effect was a slight jerk down at the severance of each fibre. The fewness and fineness of the filaments, and the delicacy of their attachment, looked very inadequate for the suspension of the animal; but they proved to be strong enough and something to spare, as one of its neighbours, the Hermit Crab (*Pagurus Bernhardus*), mounted occasionally on the top of the inoffensive mussel without the least appearance of giving pain or oppression, although the crab used no precaution in taking light steps in ascending, nor seemed in any way doubtful of the stability of his footing. I watched all day patiently—but no more fibres; after dark, I made my observations only occasionally and by candle-light, the gas being too distant for minute inspection. Returning on one of these visits, after an absence of an hour, I found four new fibres affixed. This was a great disappointment, to lose, by this short absence, a sight I had so much wished to see. Next day there were no more new fibres; and, as it had seven, it might not be in much want of more. To reduce it again to the necessity of making a new supply, I cut four, leaving three, and I again set to watch with renewed zeal.

Darkness came on without bringing about the wished-for object ; but to profit by my last night's disappointment, I placed the aquarium on the table, raised to a convenient height for inspection, bringing the gas to bear effectually upon it by means of a flexible tube ; and, so far as the facility of inspection went, all seemed right, with little probability of disappointment. Believing that it could not remain long without the support of more fibres, and to awaken it to a sense of that necessity, I agitated the water by rocking the jar slightly from side to side. But I began to perceive, to my dismay, that the water was in an unhealthy state ; I replaced it with an artificial mixture, in which all appeared to revive. Next morning all seemed to be again healthy, yet the mussel had thrown out no new fibres since I cut the four. By the afternoon, I had got a new supply of sea-water, and substituted it for the artificial, which gave a renewed stimulus to the whole. I now observed that the motions of the mussel were frequent : after a short time, it threw out, with considerable force, two small, well-defined streams of milk-like fluid from an aperture at the posterior margin of the anal current, which shot like two silvery wires through the water, then gradually opened and broke up into a beautiful shower of feathery-looking flakes precipitating rapidly to the bottom. The streams continued at intervals for about a quarter of an hour, and towards the end, when more scanty, they became finer and single. I believe the white matter to be ova. I subjected it to the microscope, and found it composed of little transparent globules, filled with granular matter surrounded by a delicate membrane, and, when ruptured, the contents flowed out freely. At the close of the milky discharge, the animal became more restless, and the valves opened more widely. The foot now began to protrude and feel about, and fixed for a few seconds on the jar, then darted in with great force : it seemed to be very sensitive, often withdrawing from a slight touch on its own fibres ; again the foot protruded more than an inch, and fixed to the jar ; the animal now began to move forcibly up and down, as if endeavouring to drag itself from the byssus ; the peduncled attachment was seen at every pull rising above the valves of the shell ; these motions lasted about five minutes, the foot still adhering to the glass, when, to my joy, I saw a very fine fibre stretched up by its side, and a white spot coming distinctly into view under the tip of the foot.

I have since placed other mussels in separate jars, and cut all the byssus close by the shell ; in five hours afterwards, some had three, others four and five fibres ; next day, one of them had eighteen fibres ; and again the following day one of them had cast its byssus, and had attached itself three inches farther up the jar by the new fibres before it disengaged itself from the old. I have now often seen the fibres fixed ; the part of the foot that performs this office is at a point a little below the apex. When more than one fibre is attached at a time, the lower one is fixed first, then the foot is pushed a little farther up on the same line, and a second and a third are fixed in the same way ; but I have never seen more at a time than three, sometimes two, and often only one.